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(54) Block-assembled spoked wheel.

(57) A spoked wheel of the type in which two flanges (9) formed on a hub (7) and a rim (2) are fastened and fixed by means of a number of spokes (1). In order to permit a remarkable increase in the number of spokes so that the mounting operation does not become too complicated, a plurality of adjacent spokes are grouped into one block (b), said spokes belonging to such a block are fitted on the same side of the same flange and are made to extend substantially in the same direction so that they are fastened by means of corresponding nipples (5) to mounting holes (3) which, for each block, are formed on the same circumferential line (x or y) of said rim.

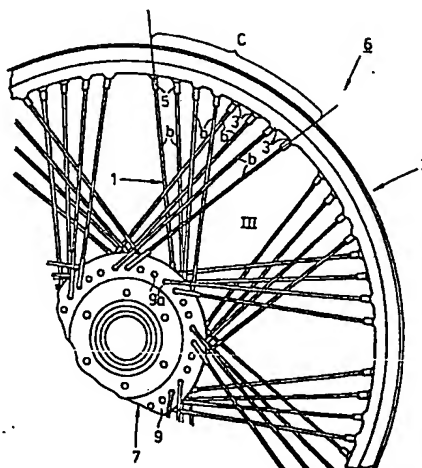


Fig. 1

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Block-Assembled Spoked Wheel

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The invention relates to a spoked wheel for two-wheeled vehicles, especially for motor-cycles.

When in use, the spokes of a spoked wheel are subject  
20 to tensile forces, as they are screwed and fastened  
to corresponding nipples which are provided in spoke  
mounting holes as arranged in the wheel's rim. If the  
tension thus applied falls to zero or less, the nipples  
become loose and the spokes slacken. Therefore, it  
25 is desirable for the spokes to have quite a large  
extension at a pre-set tension, i.e., to have such a  
high spring effect that the variations in applied loads  
which are caused by the function of the wheel rotations  
can be easily absorbed by their elastic deformations.  
30 It follows that thin spokes are preferable to thick  
spokes, although the latter have a higher rigidity.

However, if thin spokes are used, it is necessary to  
increase the number of spokes in order to meet the  
35 requirements for sufficient strength.

1

The arrangement of an increased number of spokes results however, in the respective mounting operations becoming too complicated and cumbersome, as the  
5 individual spokes intersect in a complex manner within a restricted area.

The invention as claimed, is intended to remedy these drawbacks. It solves the problem of providing a  
10 remarkably increased number of spokes and yet permitting an easy assembly of said spokes.

The advantages offered by the invention are mainly that an increased number of spokes can be easily  
15 assembled, so that thinner spokes can be used whilst being prevented from being slackened, as a plurality of adjacent spokes have been grouped into neighbouring blocks, the spokes belonging to an individual block being fitted at the same hub flange and being made to  
20 extend substantially in the same direction and being, by means of corresponding nipples, fastened to the rim in mounting holes which for each block of spokes are provided in the same circumferential line of the rim. All in all, the invention provides a remarkable  
25 improvement in the art of spoked wheel manufacture.

One way of carrying out the invention is described in detail below, with reference to the drawings which illustrate only one specific embodiment of the  
30 invention in which:

Figure 1 is a front elevation showing a portion of a block-assembled spoke wheel, in accordance with the invention;

Figure 2 is a sectional side elevation of same;

35 Figure 3 is a view showing a portion of the rim, as taken from arrow III in Figure 1;

1 Figure 4 is a view showing a portion of a partially-modified rim;

Figure 5 is a sectional view showing the fastened condition of a spoke to a nipple;

5 Figure 6 is a view showing a portion of the rim;

Figure 7 is a front elevation showing a portion of a spoked wheel according to the prior art.

As shown in Figure 1, a block-assembled spoked wheel 6  
10 comprises a rim 2, a hub 7 and a number of spokes 1, which are mounted to extend under tension between the rim and the hub. The hub 7 is formed, as shown in Figure 2, on its circumference with a right hand flange 9 and left hand flange 9', each provided with  
15 a number of holes 9a for the spokes. The holes are arranged at a predetermined pitch P and are furthermore arranged so that the opposing holes in the right and left flanges are coaxial. Further, the rim 2 is formed in its central part by a drop portion 10, in which a  
20 number of mounting holes 3 for mounting nipples 5 are provided. Of said mounting holes 3, two neighbouring holes are always grouped into one block b, as shown in Figure 3, so that the two holes 3 belonging to one block, are arranged on a first circumferential line x  
25 of the rim 2, whereas the two holes 3 belonging to the adjacent block b are arranged on a second circumferential line y of the rim. As circumferential lines x and y are provided in spaced relationship on different planes, the blocks are zigzagged.

30

In accordance with a preferred embodiment of the invention, the holes 3 belonging to four of such blocks, i.e., the eight adjacent holes 3 of four of such blocks, are arranged at the same pitch P and are assembled into  
35 one group C, as shown in Figure 1.

- 1 The pitch P between the adjacent groups C of blocks b is  
larger than the predetermined pitch P between the  
adjacent spokes which form said groups C, so that said  
mounting holes 3 are arranged at irregular pitches as a  
5 hole. Preferably, the pitch P between the adjacent  
groups C should be twice as large as the pitch which is  
provided between the members of each group, as shown in  
Figure 3.
- 10 Incidentally, numeral 11 in Figure 3 indicates a valve  
hole which is formed in the interval between adjacent  
groups C, said interval being twice the length of the  
pitch P.
- 15 Moreover, the two adjacent spokes 1, which form one  
block b, are fitted in flange 9 or 9' of the hub 7 on  
the same side and in such a manner as to extend sub-  
stantially in the same direction, so that their heads  
1b are fixed to the corresponding holes 9a and such  
20 that their leading threaded portions are fastened by  
the corresponding nipples 5, which are mounted in the  
two neighbouring holes 3, belonging to the respective  
block b. As a result, each group C is composed of  
eight spokes 1, which is twice as many spokes as used  
25 in the prior art embodiment, as shown in Figure 7.

It is to be noted that although the invention thus  
far described has irregular pitches, the fastening holes  
as provided in the rim, may be spaced at the same pitch  
30 all over the rim, as shown in Figure 4. In such an  
embodiment therefore, the pitch between neighbouring  
spokes is equal to the pitch between neighbouring groups  
C, so that all the spokes of the wheel are arranged at  
the same pitch.  
35

1 Moreover, although each block b thus far described is  
composed of two spokes 1, each may comprise, if  
necessary, an increased number of spokes, three, for  
example.

5

As shown in Figure 7, a spoked wheel 6' according to  
the prior art is constructed such that four spokes  
forming one group C are fitted respectively in the front  
and rear sides of the two flanges 9 as formed on a hub 7.

10 In this prior art wheel, the spokes intersect in a complex  
manner within a restricted area, so that their mounting  
operations become so complicated as to invite problems.  
Obviously, said prior art arrangement of the spokes does  
not permit a remarkable increase in the number of spokes.

15

As described hereinbefore, with reference to Figures  
1 to 6, according to the present invention, as a  
plurality of adjacent spokes has been grouped into  
blocks b, an increased number of spokes can be easily  
20 assembled so that thinner spokes can be used whilst  
being prevented from slackening. Moreover, as the  
number of groups C decreases, irregular pitches can be  
easily affected. With these irregular pitches, it is  
possible to attain an excellent design and provide a  
25 convenient location for a valve hole, irrespective of  
the numerous spokes. The area for said valve hole  
can be enlarged to permit a reliable injection of  
air into a tyre after arranging same at the rim.

30

35

## 1 Claims:

1. A spoked wheel comprising two flanges (9, 9')  
formed on a hub (7) and a rim (2) which are connected  
5 by means of a number of spokes (1), said spokes  
being fixed to said rim by means of nipples (5) which  
are housed in mounting holes as provided in said rim,  
characterized in that a plurality of adjacent spokes  
are grouped into one block (b) and in that the spokes  
10 belonging to said block are fitted on the same side  
of the same flange (9 or 9') and are made to extend  
substantially in the same direction so that they are  
fastened by means of corresponding nipples to said  
mounting holes (3) which are formed on a common  
15 circumferential line (x or y) of said rim.
2. Spoked wheel according to claim 1, characterized  
in that said mounting holes (3) belonging to adjacent  
blocks (b) of spokes (1) are arranged in said rim on  
20 circumferential lines (x or y) on different planes  
such that the blocks are zigzagged.
3. Spoked wheel according to claim 1 or 2, character-  
ized in that four adjacent blocks (b) of spokes (1)  
25 are grouped into one group (C) and the pitch between  
the adjacent groups (C) is larger than the pitch  
between each of the spokes which form any of said  
groups (C).
- 30 4. Spoked wheel according to one of claims 1 to 3,  
characterized in that the pitch between adjacent  
groups (C) of spoke blocks (b) is twice as large as the  
pitch between the spokes (1) which are comprised within  
any of said groups.





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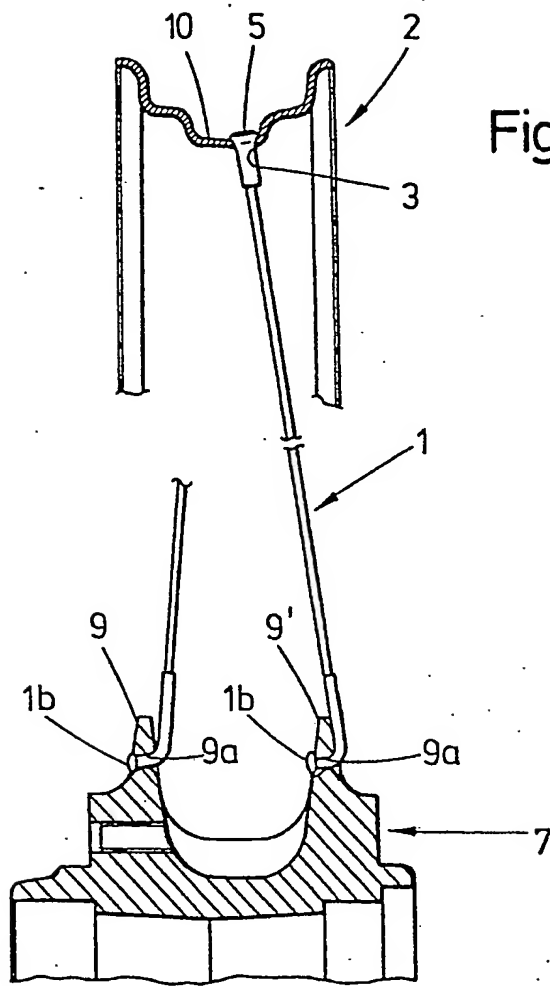


Fig. 2

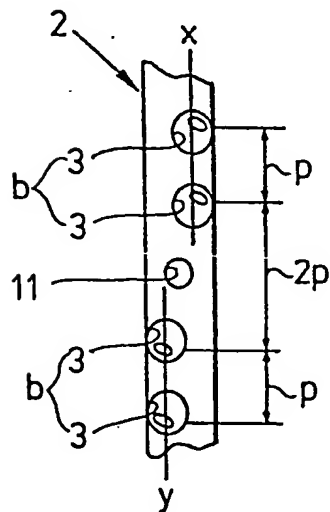


Fig. 3

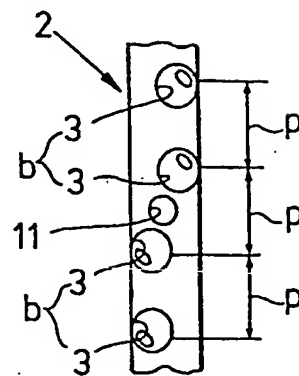


Fig. 4

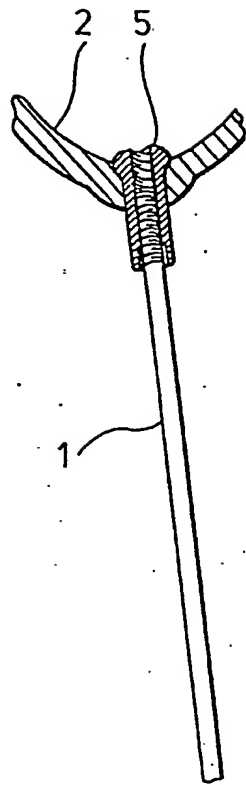


Fig. 5

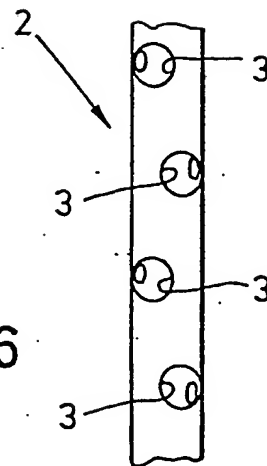


Fig. 6

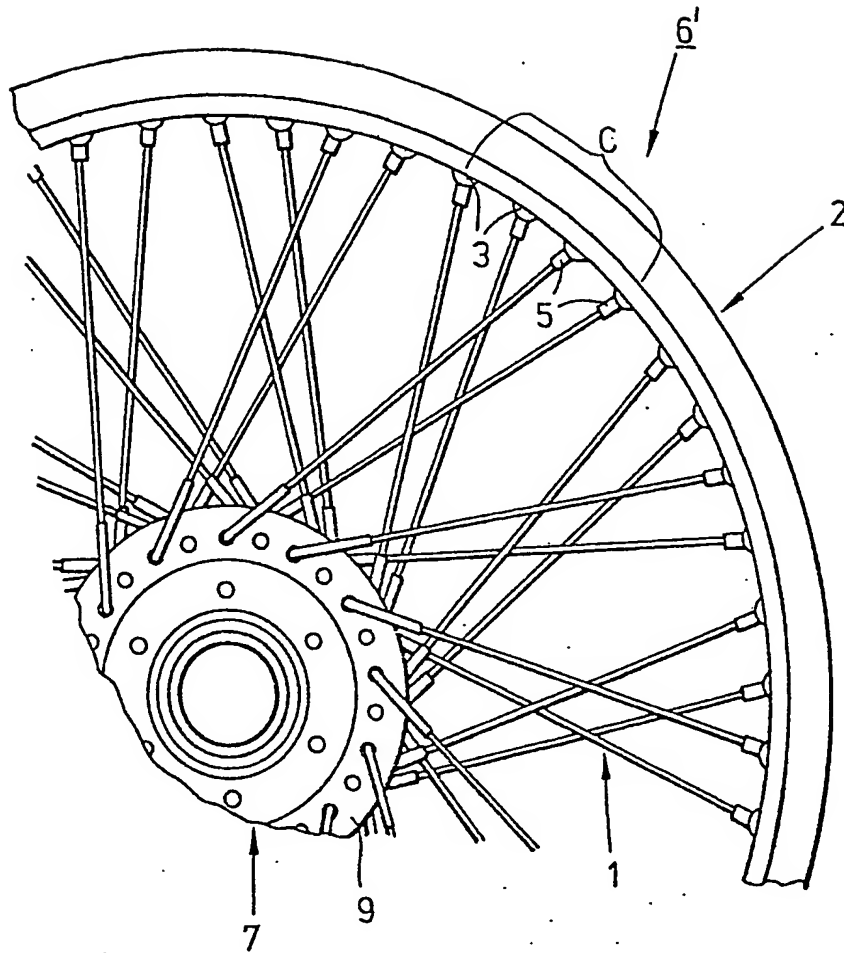


Fig.7